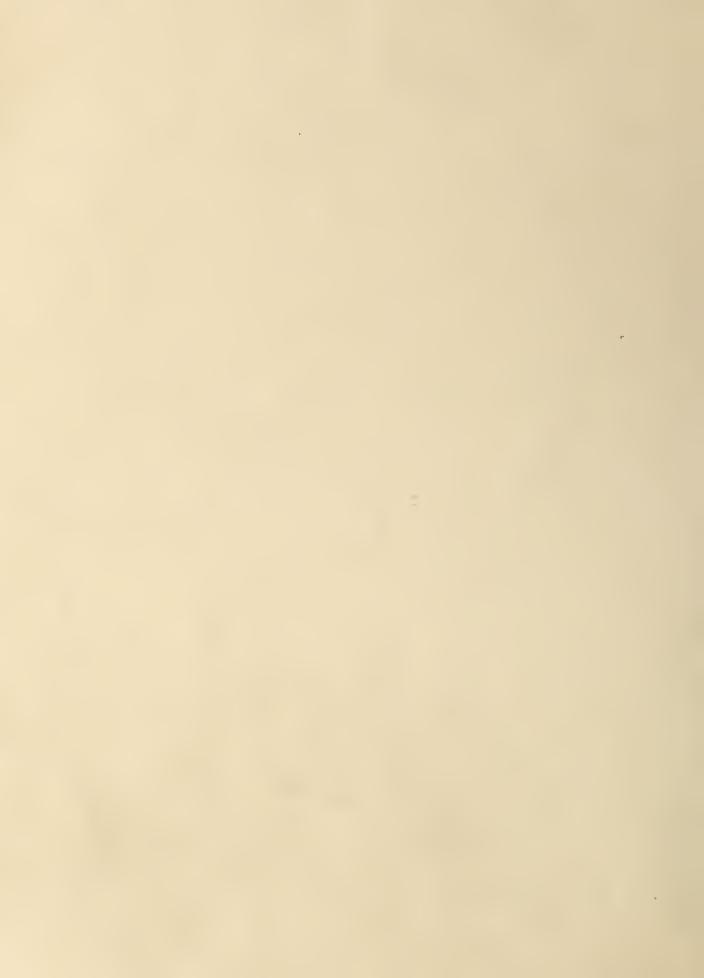
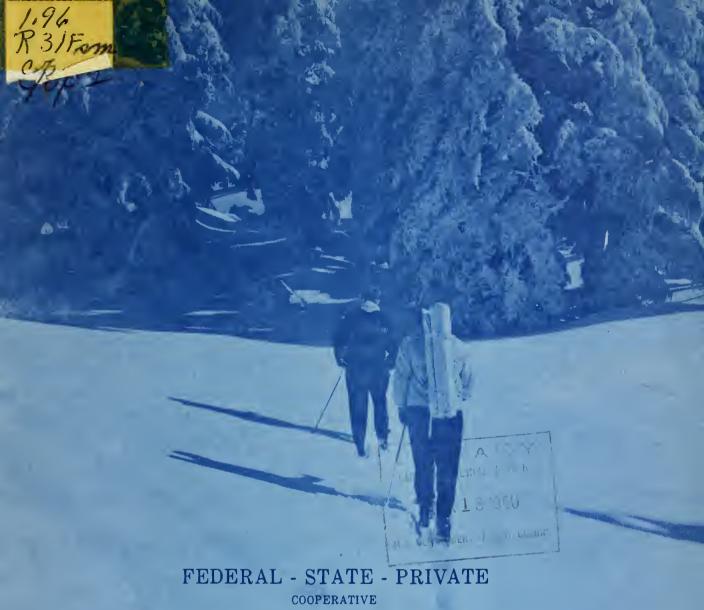
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SNOW SURVEY and WATER SUPPLY FORECASTS for COLORADO and NEW MEXICO

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE and

COLORADO AGRICULTURAL EXPERIMENT STATION,
STATE ENGINEER of COLORADO
and STATE ENGINEER of NEW MEXICO

Data included in this report were obtained by the agencies named above in cooperation with the Bureau of Reclamation, U.S. Forest Service, National Park Service and other Federal, State, and private organizations.

MAR. 1, 1960

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow couraes are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
COLORADO ANO STATE OF UTAH	MONTHLY (JANMAY)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
COLUMBIA AND STATES OF	MONTHLY (JANMAY)	BOISE, IDAHO	IOAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATEOF MONTANA	MONTHLY (FEBMAY)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
WEST-WIDE	OCT.1. APR.1. MAY 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ARIZONA	SEMI-MONTHLY(JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOCIATION ARIZ. AGR. EXP. STATION
COLORADO ANO NEW MEXICO	MONTHLY (FEBMAY)	FORT COLLINS, COLORAGO	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
NEVAOA	MONTHLY (FEBAPR.)	RENO. NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JANMAY)	PORTLANO. OREGON	ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHIN GTON	. MONTHLY (FEBMAY)	SPOKANE. WASHINGTON ——	WASH. STATE DEPT. DF CONSERVATION
WYOMING	MONTHLY (FEB JUNE)	CASPER. WYOMING	WYOMING STATE ENGINEER
Copies of these various	reports may be secured	from: Head, Water Suppl Soil Conservation 209 S. W. Fifth	
	PUBLISHED BY 01	THER AGENCIES	
REPORT	ISSUED	AC	GENCY
BRITISH COLUMBIA	MONTHLY (FEB JUNE)		R RIGHTS BR., DEPT, OF LANDS JAMENT BLOG., VICTORIA, B.C.,
CALIFORNIA	MONTHLY (FEB MAY)	CALIFORNIA DEPT. C	F WATER RESOURCES, SACRAMENTO

CALIFORNIA

FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

COLORADO RIVER, PLATTE RIVER ARKANSAS RIVER AND RIO GRANDE DRAINAGE BASINS

Issued

March 1, 1960

Report Prepared By
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and
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Fort Collins, Colorado

United States Department of Agriculture
Soil Conservation Service
and
Colorado Agricultural Experiment Station
Fort Collins, Colorado
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State Engineer of Colorado
Denver, Colorado
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J. E. Whitten
State Engineer
State of Colorado

S. E. Reynolds State Engineer State of New Mexico

General Series Paper No. 723 Colorado Agricultural Experiment Station

WATER SUPPLY OUTLOOK COLORADO, RIO GRANDE, PLATTE AND ARKANSAS DRAINAGE BASINS MARCH 1, 1960

WATER SUPPLY OUTLOOK FOR MARCH 1, 1960 IS IMPROVED SOMEWHAT OVER LAST MONTH. ALL AREAS OF COLORADO AND NEW MEXICO WERE IMPROVED. THE SNOWPACK IN SOME AREAS LIKE THE SOUTH. PLATTE LOOK 20% TO 30% BETTER THAN LAST MONTH. HEAVY SNOW FALL TOWARD THE END OF THE MONTH WAS PRIMARILY RESPONSIBLE FOR THIS IMPROVEMENT. MOST OF COLORADO AND ALL OF NEW MEXICO SHOULD HAVE A NEARLY ADEQUATE WATER SUPPLY DURING THIS IRRIGATION SEASON, IF THE REMAINDER OF THE SNOW SEASON IS AT LEAST NORMAL.

COLORADO. The northern half of the state is still the shortest area of the state as far as snowpack is concerned, but it is much improved over last month. Most of the pack in this area increased from 80% to 100%. The southern half of the state is virtually assured of a good water year. The only doubtful area is the Middle and Lower Arkansas. Some small shortages could develop on the middle area of the Arkansas between Canon City and John Martin Reservoir. Areas below John Martin Reservoir could have some severe water shortages due primarily to the lack of storage in the reservoir.

Most of the eastern slope flat lands have experienced more snow than usual and the soil moisture in these areas is excellent. Mountain soils are also in good condition.

NEW MEXICO. Water supply for New Mexico looks excellent as of March 1, 1960. All streams should flow better than normal with some as high as 150%.

The snowpack in New Mexico improved during the month and now some of the individual snow courses are as high as 200% of normal. Some other snow courses did not increase as much as expected. The Canadian River is likely to have the lowest runoff in New Mexico. However, it should be normal or slightly higher.

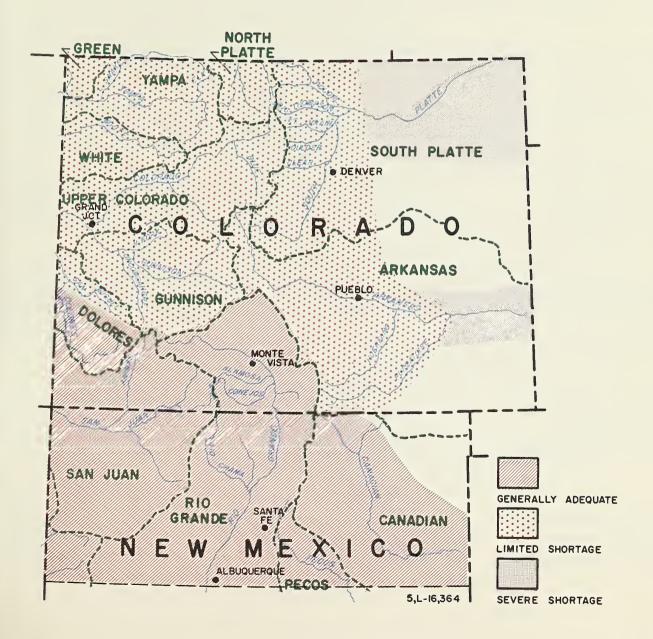
Storage in Elephant Butte and Caballo is now about 60% of normal. The high runoff should improve the storage in these reservoirs.

Storage on Tucumcari Project is 125% of normal. Water supply in this area should be excellent.

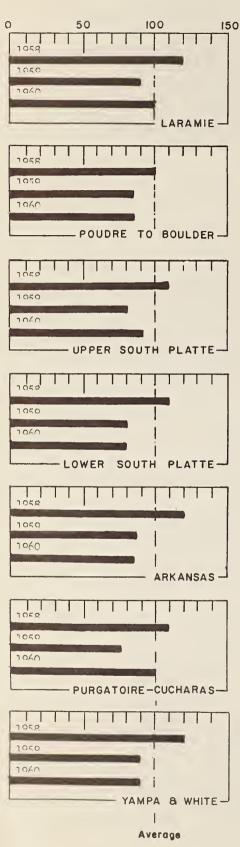
WATER SUPPLY OUTLOOK

THE MAP ON THIS PAGE INDICATES THE MOST PROBABLE WATER SUPPLY AS OF THE DATE OF THIS REPORT. ESTIMATES ASSUME AVERAGE CONDITIONS OF SNOW FALL, PRECIPITATION AND OTHER FACTORS FROM THIS DATE TO THE END OF THE FORECAST PERIOD. AS THE SEASON PROGRESSES ACCURACY OF ESTIMATES IMPROVE. IN ADDITION TO EXPECTED STREAMFLOW, RESERVOIR STORAGE, SOIL MOISTURE IN IRRIGATED AREAS, AND OTHER FACTORS ARE CONSIDERED IN ESTIMATING WATER SUPPLY. ESTIMATES APPLY TO IRRIGATED AREAS ALONG THE MAIN STREAMS AND MAY NOT INDICATE CONDITIONS ON SMALL TRIBUTARIES.

March 1, 1960



WATER SUPPLY OUTLOOK



THE BAR CHARTS ON THIS AND THE NEXT PAGE REPRESENT GRAPHICALLY THE MOST PROBABLE WATER SUPPLY OUTLOOK FOR 1960 AS COMPARED TO 1958 AND 1959. STREAMFLOW AND OTHER FACTORS FOR 1959 ARE PARTIALLY ESTIMATED AS FULL DATA ON WATER SUPPLY CONDITIONS ARE NOT YET AVAILABLE. ESTIMATES OF PAST CONDITIONS AND FORECASTS HAVE BEEN MADE BY THE AUTHORS OF THIS REPORT IN CONSULTATION WITH WATER OFFICIALS.

LARAMIE: Snowpack on the Laramie watershed is much improved this month and about 90% of normal. Soil moisture is above average at the higher elevations and also in the valleys. The flow of the Laramie should be adequate for irrigation needs in Colorado.

POUDRE TO BOULDER: The water supply outlook is greatly improved over last month, but still below normal. The snowpack ranges from 75% of normal on the St. Vrain to 92% on the Poudre River. Only slight water shortages are now anticipated. Soil moisture remains excellent. The Colorado-Big Thompson Project contains about 400,000 acre feet. Storage in smaller irrigation reservoirs is about normal.

UPPER SOUTH PLATTE: The snowpack on the South Platte is just slightly improved over last month. It is now expected to flow just about normal during the summer months. Soil moisture is excellent. The Denver reservoirs are expected to fill again this year.

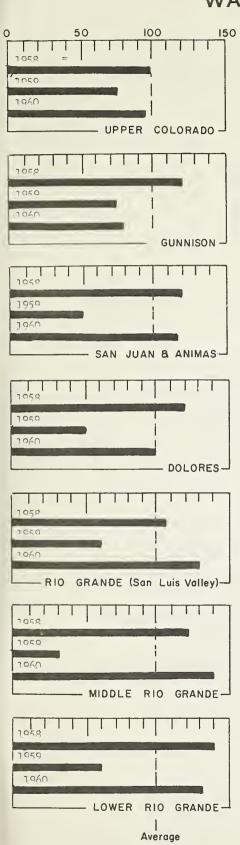
LOWER SOUTH PLATTE: The Lower South Platte can look forward to a similar year as last. The headwaters have about a normal snowpack. Heavy upstream usage will limit the water available to downstream users. Probably about 80% of average water supply is all that can be anticipated.

ARKANSAS: Headwaters adequate water supply - Middle area just very limited shortage - Below John Martin Reservoir some serious shortages could exist. This is about how the water supply looks on the Arkansas. The soil moisture is excellent. Small irrigation reservoirs are slightly below normal but John Martin is much below normal containing only 21,000 acre feet.

PURGATOIRE-CUCHARAS: The summer flow for these streams should be about normal. The plains have had above normal snowfall and the soil moisture should be excellent.

YAMPA-WHITE: This area is slightly improved over last month and is approaching normal. The summer flow from these streams should be close to normal during the irrigation season. Soil moisture is good.

WATER SUPPLY OUTLOOK



UPPER COLORADO: The snowpack now shows 93% of normal. This is a sizeable improvement over last month when the snowpack was only 75%. There should be only small shortages in water supply this summer. Soil moisture is good.

GUNNISON: 91% of normal snowpack exists on the headwaters of the Gunnison. Reservoir storage is about 75% of normal. Soil moisture is good. Water users along the Gunnison should have only very limited shortages this irrigation season.

SAN JUAN-ANIMAS: The San Juan watershed still has the best snow cover on the western slope, but the Animas is rapidly catching up. The water supply on these two basins should be excellent. The snowpack is 123% of normal and similar to the year 1957. Soil moisture is excellent in both mountains and valleys.

DOLORES: The summer flow of the Dolores should be close to normal. The existing snowpack is about 95% of normal. Very limited shortages might be expected. The soil moisture is excellent.

RIO GRANDE (San Luis Valley): The prospect for excellent summer runoff is better than at any time since 1957. Small irrigation reservoirs contain about 90% of normal storage. This coupled with better than average runoff, insures an excellent water supply for this irrigation season. Soil moisture is good in most areas.

MIDDLE RIO GRANDE (New Mexico): Better than average snowpack exists in most areas on the Rio Grande in New Mexico. Some of the individual snow courses are 200% above normal for this date. With this condition and the Upper Rio Grande above normal, an excellent water supply can be anticipated. Soil moisture at all elevations is excellent. Reservoir storage is below normal. All the Rio Grande tributaries are expected to produce better than normal runoffs this irrigation season. Flow of Rio Grande at San Marcial should be 160% of normal.

LOWER RIO GRANDE: The Lower Rio Grande should experience a better runoff year than any since 1957. The prospect for water supply, however, is not quite as good as last year due primarily to the decreased storage in Elephant Butte. This year should help build the storage in Elephant Butte back to a more desirable level. Soil moisture is reported as excellent in most areas.

FOR DETAILS ON WATER SUPPLY CONDITIONS ON THE COLORADO RIVER DRAINAGE IN UTAH AND ARIZONA, NOT LISTED OR DISCUSSED IN THIS REPORT, REFERENCE SHOULD BE MADE TO THE STATE SNOW REPORTS FOR UTAH (see inside cover).

STREAMFLOW FORECASTS APRIL-SEPTEMBER INCLUSIVE*

March 1, 1960

"The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature during the forecast period will be near average. Appreciable deviations from normal of temperature and/or precipitation during the forecast period will correspondingly modify these forecasts."

			15-Yr.				15-Yr.
BASIN AND STREAM	Forecast 1000 AF	% Avg. 1943-57	Avg. 1943-57	BASIN AND STREAM	Forecast 1000 AF	% Avg. 1943-57	Avg. 1943-57
NORTH PLATTE				COLORADO			
Laramie at Jelm	80	75	107	Gunnison at Gr. Junction	1, 100	78	1,416
Laranne at Jenn	00		10.	San Juan at Rosa, N.M.	810	132	613
SOUTH PLATTE				Piedra at Piedra	217	117	186
Cache la Poudre at Canon(1)	170	90	189	Los Pinos nr Bayfield (7)	270	123	220
Big Thompson at Drake	80	86	93	Florida nr Durango	80	129	62
Saint Vrain at Lyons	84	100	84	Animas at Durango	550	116	475
Boulder at Orodell	60	109	55	La Plata at Hesperus	32	114	28
Clear Creek at Golden (2)	144	105	137	Dolores at Dolores	310	111	279
ARKANSAS				GREEN RIVER			
Arkansas at Salida (3)	340	100	339	Little Snake at Lily	345	99	350
Arkansas at Pueblo (3)	360	105	342	Elk at Clark	206	96	215
Cucharas at La Veta	15	107	14	Yampa at Steamboat Spgs.	2 95	102	288
Purgatoire at Trinidad	50	96	52	White at Meeker	315	92	343
COLORADO				RIO GRANDE			
Colorado nr Granby (4)	230	98	235	South Fork at South Fork	170	140	121
Willow nr Granby	43	98	44	Rio Grande at Del Norte (8)	700	142	491
Blue aby Green Mt. Res.	280	97	290	Alamosa above Terrace Res.	96	135	71
Colorado at Glenwood Spgs. (5) 1490	96	1546	Conejos at Mogote	240	122	197
Roaring Fork at Glenwood (6	800	100	798	Culebra at San Luis (9)	30	125	24
Plateau Creek at Collbran	51	90	57	Rio Chama nr La Puente	283	135	210
Uncompangre at Colona	156	104	150	Costilla at Costilla	34	126	27
Surface Cr. nr Cedaredge	17	94	18	Rio Grande at Otowi Bridge(10)		158	633
Williams Fk nr Parshall	73	94	78	Rio Grande at San Marcial (10)	695	160	434
				Pecos at Pecos	89	185	48

- Observed flow minus diversions from Michigan, Colorado and Laramie Rivers, plus diversions for irrigation and municipal use.
- (2) Observed flow minus diversions through Jones Pass Tunnel.
- (3) Observed flow plus change in storage in Clear Creek, Twin Lakes and Sugar Loaf Reservoirs minus diversions through Busk-Ivanhoe and Twin Lake Tunnels and Ewing, Fremont Pass, Wurtz and Columbine Ditches.
- (4) Observed flow plus diversions by Adams tunnel and Grand River ditch plus change in storage in Granby Reservoir.
- (5) Observed flow plus the changes as indicated in (4) plus Moffat Ditch.

- (6) Observed flow plus diversion through Twin Lakes tunnel.
- (7) Observed flow plus changes in Vallecito Reservoir.
- (8) Observed flow plus change in storage in Santa Maria, Rio Grande, and Continental Reservoir.
- (9) Observed flow plus changes in storage in Sanchez Reservoir.
- (10) Observed flow plus changes in storage in Santa Maria, Rio Grande, Continental, Terrace, Sanchez, Platoro and El Vado Reservoirs.
- * Rio Grande at Otowi and Rio Grande at San Marcial ave. Mar-July inclusive.

COOPERATIVE SNOW SURVEYS SUMMARY OF SNOW MEASUREMENTS

March 1, 1960

WATERSHEDS	No. of Courses Averaged	Years of Record	as per	Content cent of Avg.	WATERSHEDS (No. of Courses Averaged	Years of Record	as per	Content cent of Avg.
ARKANSAS RIVER					PLATTE RIVER				
Arkansas River	7	7-24	89	92	Laramie River	1	23	100	115
					South Platte River*	* 2	20-23	81	100
COLORADO RIVER	}				Poudre River	7	8-23	75	92
Colorado River*	22	7-24	91	93	Big Thompson Rive	r 4	8-19	77	84
Roaring Fork	3	14-24	80	79	St. Vrain River	3	10-23	67	75
Plateau Creek	2	20-23	106	95	Boulder Creek	2	6-23	55	80
Yampa River	5	9-24	78	86	Clear Creek	5	8-23	93	103
White River	2	21-24	81	94					
Gunnison River	11	1-24	100	91	RIO GRANDE				
Dolores River	3	18-21	107	91	Rio Grande (Colo.)	9	9-23	178	135
San Juan River	5	9-23	207	121	Rio Grande (N. M.)	11	7-22	222	142
Animas River	7	9-22	141	107	Conejos River	2	23	208	128
					Chama River	3	10-20	201	112
					Pecos River	3	10-23	354	169
					Canadian River	3	18-22	183	119
					Alamosa River	1	23	137	89
*Above Glenwood S	Springs				** Above Denver				

AVAILABLE SOIL MOISTURE

March 1, 1960

DRAINAGE BASIN		SOIL	MOIS	TURE	CON	TENT	Years	DRAINAGE BASIN		SOIL	MOIS	TURE	CON	FENT	Years
AND	Date		1	IN INC	CHES		of	AND	Date		IN	INC	HES		of
STATION	*	Cap.	1960	1959	1958	Avg.	Record	STATION		Cap.	1960	1959	1958	Avg.	Record
NORTH PLATTE Muddy Pass Willow Pass SOUTH PLATTE Feather Laramie Road		8. 0 7. 0 6. 0 7. 0	5. 0 7. 0 4. 5 5. 3	0. 2 0. 7	4.5 6.9	2. 3 3. 8	6 6 8 8	UPPER COLORADO Vail Ranch Creek Hairpin Vasquez Siphon Gore Blue River		8. 0 7. 0 8. 0 7. 0 7. 0 7. 0	5. 2 5. 7 1. 0 2. 1 4. 4	0.6 4.3 0.5 3.8 0.1	5. 4 5. 8 6. 4 5. 9 1. 9 6. 8	2.6 4.4 2.0 3.7 1.2 2.9	6 4 4 4 4
Beaver Dam		6.0	4.6	0.3	1. 0	1.6	8	Dide Hiver		1.0		0. 1	0.0	2.0	•
Two Mile Guard Station		8.0 7.0	5.0 2.2	0.8 0.2	5.3 0.8	3.0 1.1	8	SAN JUAN Mineral Creek		7.0	5.6	3.1	6.5	5. 0	3
Alpine Camp		7.0	5.8	0.3	1.4	1.5	8	Molas Lake		7.0	3.2	2.5	6.7	4.1	3
Hoop Creek			4.4	2.6	3. 1	2.2	7	Cascade		7.0	5.7	4.7	7.0	5.8	3
Alma		-	5.0	0.3	4.4	2.5	4	GVVVVVGQVV							
Kenosha Pass			2.8	0.2	6.3	2.5	4	GUNNISON		0 0	5.9	7.3	7 0		0
Clear Creek		7.0	3.5	0.9		2.2	2	King		8.0	5.9	7. 3	7.2	6.0	3
ARKANSAS Leadville Twin Lakes Garfield		6.0	1. 0 4. 0 4. 8	0.5 2.9 2.8	2.7 5.1 6.4	1.3 3.7 4.3	7 4 4	RIO GRANDE (Colo) Bristol View Alberta Park Mogote LaVeta Pass)	9.0 7.0	5.5 5.0 1.1 2.8	0.5 0.3 0.1	7.0 6.1 1.9 2.4	3. 0 3. 4 1. 3 1. 8	7 7 7 4
ROARING FORK															
Placita		8.0	2.4	0.1	1.2	1.8	4	RIO GRANDE (N.M.)						
Maroon		8.0	4.8	0.1	2.9	2.3	6	Red River				0.5	6.4	2.3	6
								Aqua Piedra			0.2	1. 1	4.6	1.7	6
ELK RIVER								Bateman		0.0		1.7	7.6	4.3	4
Hahns Peak								Chamita		0.0		1.8	4.3	2.4	4
								Fenton Hill			2,0				
DOLORES								Big Tesuque				0.7	6.9	2.9	3
Lizzard Head			5.4	6.0		5.6	2	Rio En Medio				0.5	6.9	2.6	3
Dolores			2.5	3.3		2.9	2	Taos Canyon		7.0	0.4	1.4	7.0	2.8	3
Rico		7.0	5.0	5.2		5. 1	2								

ALL PROFILE DEPTHS ARE 48 INCHES *All taken within 15 days of the first of November.

STATUS OF RESERVOIR STORAGE

March 1, 1960

		U	SABLE ST					ABLE ST	
	USABLE		1000 A.			USABLE	1	000 A.F.	
RESERVOIR	CAPACITY			15-yr. Avg.	RESERVOIR	CAPACITY	- 00		15-yr. Avg
	1,000 A.F.	1960	1959	1943-57		1,000 A.F.	1960	1959	1943-57
\$	SOUTH PLATT	E DRAINA	GE						
Windsor	18.6	11.9	12.0	8.5	Twin Lakes	57.9	10.7	13.5	22.9
Cache la Poudre	9.5	8.4	8.4	6.4	Sugar Loaf	17.4	3.2	5.8	7.7
Fossil Creek	11.6	8.5	7.2	6.6	Clear Creek	11.4	8. 2	5.1	5.0
Terry Lake	8.2	5.9	4.6	4.3	Meredith	41.9		26.0	14.3
Halligan	6.4	4.5	4.8	1.9	Horse Creek	26.9	0	2.6	7.4
Chambers Lake	8.8 est.	3.1	2.0	1.7	Adobe Creek	61.6	0	29.3	21.6
Cobb Lake	34.3	18.7	18.0	5.5	Cucharas	40.0	1.2	6.0	4.7
Black Hollow	8.0	3.9	3.7	3.2	John Martin	366.6	20.9	250.5	52.6
Carter	108.9	73.6	72.4	63.7	Great Plains	150.0	55.4	112.3	51.3
Horsetooth	143.5	98.0	84.8	90.2	Mode1	15.0	3.4	4.5	2.5
Lake Loveland	14.3	9.6	10.0	5.2	Conchas (NM)	600.0	326.9	358.9	278.1
Boyd Lake	44.0	37.1	42.2	18, 1	W. C. Austin	151.0			
Lone Tree	9.2	7.6	6.9	5.6					
Mariano	5.4	5. 1	3.8	2, 2		COLOR A	DO DRAIN	NAGE	
Union	12.7	11.6	9.0	6.7	Taylor Park	106.2	46.2	54.3	60.9
Eleven Mile	81.9	97.8	97.8	69.2	Vallecito	126.3		46.1	41.0
Cheesman	79.0	60.5	56.9	47.6	Groundhog	21.7	3.2	5.5	7.0
Marston	18.9	15.5	14.8	14.2	Granby	465.5	231.2	267.9	213.3
Antero	33.0	15.7	15.7	14.2	Green Mountain	146.9	71.4	53.4	68.0
Gross	43.1	23.1	18.7						
Barr Lake	32.2	26.7	20.3	19.9	R	IO GRANDE (C	OLO) DR.	AINAGE	
Milton	24.4	14.7	15.4	9.7	Rio Grande	45.8	12.0	6.2	11.1
Standley	18.5	15.3	9.2	10.0	Santa Maria es	t 45.0	4.0	7.7	7.5
Marshall	10.3	5.9	2.0	1.6	Sanchez	103, 2	11.5	25.4	9.6
Horse Creek	20.6	12.5	9.5	9.9	Terrace	17. 7	6.1	2.4	2.6
Riverside	57.5	54.3	49.4	42.6	Continental est	26.7	4.1	2.1	7.3
Empire	37. 7	32.5	31.9	26.6	Platoro	60.0	4.0	34.0	4.7
Jackson Lake	35.4	31.3	32.0	30.6	1 Tatoro	00.0			
	32.8		22.1	18.6	12	IO GRANDE (N	J M) DR	AINAGE	
Prewitt Point of Rocks		29.1	67.0	51.2		2,206.8	587.9	945.0	606.6
	70.0	47.0		20.5	Caballo	344.0	122.6	239.0	170.4
Julesburg	28.2	28.2	21.0	20.5	El Vado	194.5	2.7	2.7	34.9
					Alamogordo	122. 1	115.0	123.5	55.4
					McMillan-Avalor		13.0	41.8	13.4
*Shorter Period	S					307.0			91.7
					Red Bluff(Tex)	301.0			01.1

VALLEY PRECIPITATION 1/

Division Averages and Departures $\underline{^{3}}/$

DRAINAGE DIVISIONS	_	all OctNov. Dept.	Dec. *Avg.	inter * Jan. Dept. 2/	DRAINAGE DIVISIONS	Sept.	Fall -Oct.	-Nov. Dept.		inter Jan. Dept.
South Platte River Arkansas River Colorado River San Juan River, N. M. 1 / Preliminary analysis furnished by Meteore Bureau	6.28 7.33 8.16 7.27 by U.S.	/1.90 /2.44 /2.21 /2.52 Weather Bure	. 61 1. 19 2. 81 . 87 eau from	31 /.14 12 07	Canadian River, N.M. Rio Grande, Colo. Rio Grande, (N.), N.M. Rio Grande, (S), N.M. Pecos River, N.M. 2/ Departure from aver 3/ Selected Stations	5.52 5.21		/0.02 /3.70 /0.72 /1.32 -0.29	. 56 1. 35 1. 37 . 49 . 58	23 / 32 / 35 04 11

SNOW COURSE MEASUREMENTS

March 1, 1960

SNOW COURSE	Doto	Depth 1960 Inches	ln I	Content		Years of Record	SNOW COURSE	Doto	Depth 1960 Inches		Content		Years of Record
	Date	menes	1900	1939	Avg.	**		Date	menes	1300	1939	Avg.	**
PL	ATTE	RIVER	DRAIN.	AGE			AF	RKANSAS	RIVER	DRAINA	GE		
NO. PLATTE RIV	ER						ARKANSAS RIVER						
Cameron Pass (a)	2/29	60	18.0	19.8	18.0	23	Tennessee Pass	2/26	40	9.1	10.2	7.9	24
Park View	2/24	34	7.5	6.6	7.7	24	Twin Lakes T.	est	38	8.0	7.8	8.9	
Columbine Lodge	2/25	60	16.4	22.2	19.6	24	La Veta Pass*	2/24	32	7.0	6.7	8.4	
Willow Cr. Pass*	2/24	42	10.0	8.6	13.6	22	4 Mile Park	2/26	17	2.4	4.9	3. 7	21
Northgate	2/25	21	4.5	5.2	6.2	10	Fremont Pass	2/25	53	14.2	12.9	13.2	24
T ADAME DIVED							Monarch Pass	2/26	50	12.4	14.4	14.9	
LARAMIE RIVER Roach (a)		NS	NS	10.0	15 5	1.0	Saint Elmo (a) Timberline	2/29	46	9.7	6.3	9.7	
Deadman Hill* (a)	2/29	NS 54	NS 14.0	16.0 14.0	15.7 12.2	19 23	East Fork	2/26	68	15.3	18.0	17.6	
McIntyre	2/20	NS	NS	9.5	9.6	11	Westcliffe	$\frac{2}{24}$ $\frac{2}{26}$	32 27	7.6	8.9	8.7	
Wichityic		110	140	0.0	0.0	11	Bourbon	2/25	29	4.9 7.8	7.0 4.7	5.8 	7 3
POUDRE RIVER							Cooper Hill	2/29	53	13.5	4. /		3
Cameron Pass(a)	2/29	60	18.0	19.8	18.0	23		2/20	00	10.0			
Chambers Lake	2/28	20	7.0	11.7	7.0	23	CO	LORADO	RIVER I	DRAINA	GE		
Big South	2/28	12	2.5	3.7	2.2	22							
Deadman Hill (a)	2/29	54	14.0	14.0	12.2	23	COLORADO RIVER	(Above G	1enwood	Springs	;)		
Lake Irene*		NS	NS	19.0	18.6	22	Cameron Pass* (a)	2/29	60	18.0	19.8	18.0	23
Hour Glass Lake	2/24	18	3.7	5.3	6.6	20	Phantom Valley	2/25	31	7.3	10.9	8.9	24
Red Feather	2/26	18	4.2	7.5	6.8	10	Hoosier Pass*	2/26	46	11.1	12.9	10.0	23
Lost Lake	2/28	35	8. 1	14.2	9.8	8	Berthoud Pass	2/26	47	12.7	13.5	11.5	24
DIC THOMBSON D	TVED						Tennessee Pass	2/26	40	9.1	10.2	7.9	24
BIG THOMPSON R Lake Irene*	IVER	NS		19.0	10 6	22	M. Fork Camp Gr. Fiddler Gulch	est	34	7.0	8.2	8.0	24
Hidden Valley	2/26	31	7.9	9.8	18.6 9.4	19	Lulu	est	60	15.0	13.7	13.6	23
Deer Ridge	2/26	13	2.3	5.9	4.7	11	Willow Creek P.	2/28 2/24	57 42	15.3 10.0	15.9 8.6	13.9	22
Longs Peak	2/27	34	8.6	10.7	9.7	9	N. Inlet Grand L.	est	30	5.5	10.1	13.6	22
Two-Mile	2/26	45	11.6	13.0	12.2	8	Lake Irene	631	NS	NS	19.0	18.6	21 22
- 11 - 11 - 12 - 12 - 12 - 12 - 12 - 12	-,					Ü	Arrow	2/25	36	8. 7	11.9	9.0	22
ST. VRAIN RIVER							Lapland	2/25	28	5. 9	11.0	10.3	20
Wild Basin	est	44	10.8	12.4	11.9	23	Fremont Pass	2/25	53	14.2	12.9	12.2	24
Copeland Lake	2/26	14	2.6	5.4	5.3	11	Lynx Pass	2/24	34	8.0	10.1	10.6	24
Ward	2/25	17	3.8	7: 7	5.9	10	Shrine Pass	2/24	53	14.8	13.8	14.0	18
	_						Grizzly Peak	2/25	56	14.9	14.5	14.9	18
BOULDER CREEK		4.50		05.5			Glen-Mar Ranch	2/26	29	6.2	7.6	7.4	13
University Camp	2/25	47	14.2	25.7	17.7	23	Monarch Lake Granby	2/26	34	9.0	10.4	10.1	12
Moffat Boulder Falls	Abanc 2/25	30	7.8	16.0 14.2	7.9 9.8	10 6	Grand Lake	2/24	23	4.9	6.4	6.4	11
Bourder Fairs	2/23	30	1.0	14.4	9.0	O	Berthoud Summit	$\frac{2}{25}$	28 67	5.0	9.3	7.5	11
CLEAR CREEK							Frazer View	3/1	43	16. 1 5. 1	20.2 15.2	15.1 9.6	9
Loveland Pass	2/25	44	11.8	13.7	12.5	23	Gore Pass	2/24	26	5.5	8.6	8.4	9
Grizzly Peak*	2/25		14.9	14.5	14.9	18	Frisco	2/25	21	4.3	7.7	7.4	9
Empire	3/1	28	4.7	7.2	6.2	11	Snake River	2/25	2.5	4.4	7.5	7.3	9
Berthoud Falls	3/1	46	11.4	16.8	11.6	9	Summit Ranch	·	NS	NS	NS		
Clear Creek	2/25	55	17.0	12.4	12.6	8	Vail Pass	2/24	42	11.2	14.1	16.6	7
							Pando	2/24	28	6.1	8.0	9.7	7
SOUTH PLATTE F							Kokomo	2/23	42	10.0	7.5	10.9	7
Hoosier Pass	2/26		11.1	12.9	10.0	23	Milner	- 1	NS	NS	NS		8
Jefferson Cr.	2/25	28	6.5	8.9	7.5	20	Blue River Jones Pass	2/26	31	6.8	10.3		3
Geneva Park	2/26	11	3.4	4.5	3.5	10	Ranch Creek	2/26	45	11.8	11.0		3
							Vasquez Creek	2/25	26	5.4	9.4		3
							Cooper Hill*	2/25 2/29	40 53	9.7 13.5	11.5		3
								4,20	00	10.0			
* On adjacent dra	inage						ROARING FORK						
** Courses with le					iod 194	3-57	Ind. Pass Tunnel	est	57	13.1	15.8	14.3	24
have all years	prior to	o 1957 a	verage	d.			North Lost Trail(a)	2/24	39	9.8	12.8	12.2	23
NS No Survey							Nast Ivanhoe	2/25		NS	6.0	5.2	22
(a) Air observed							Lift	2/27	50	10.6	13.3	15.9	13
							Aspen	2/25 2/25	41 59	10.2 17.4	10.5		3
								4/20	30	. I . T			

SNOW COURSE MEASUREMENTS

March 1, 1960

SNOW COURSE		Depth 1960		r Content		Years of	SNOW COURSE		Depth 1960		Content		Year
SNOW COURSE	Deti			lnches 0 1959	A	of Record	SNOW COURSE	Date	1960 Inches	1n 1n 1960	iches 1959	Avg.	
	Date	lnches	130	1838	Avg.	**		Date	Inches	1960	1959	Avg.	**
YAMPA RIVER							RIO GRANDE IN CO	LORADO)				
Dry Lake (a)	2/29	58	16.2	18.5	17.1	21	Wolf Creek Pass	2/29	91	27.2	15.3	25.	4 :
Columbine Lodge*	- 7	60	16.4	22. 2	19.6	24	Upper Rio Grande	2/29	30	9.0	5, 0	6.	
Elk River	2/29	46	12.4	18.0	15. 1	21	Santa Maria	2/26	27	5.1	2, 0	4.	
Lynx Pass*	2/24	34	8.0	10.1	10.6	24	Pool Table	2/25	51	12.0	4.0	4.	
Rabbit Ears	,	NS		NS	22.0	8	L. Humphreys	2/25	31	6.7	6.3	5.	
Yampa View	2/26	46	11.1	13.8	12.5	9	Cochetopa Pass	2/26	28	5.7	5.0	4.	
Bear River	•	NS	NS	10.9		3	Red Mt. Pass	2/29	92	27.4	22.3	23.	
Clark-	2/26	31	7.6	12.0		4	Porcupine	2/26	50	12.2	7.5	8.	
J 101 K							Wolf Creek Summit	2/29	105	33.9	12.3	21.	
WHITE RIVER							Hiway	3/3	98	29.3	10.7		
Burro Mountain	2/24	48	13.0	17.9	14.1	24	Pass Creek	2/26	38	10.5	6.8		
Rio Blanco	2/26	33	13.1	14.4	13.1	21		,					
							ALAMOSA RIVER						
LATEAU CREEK							Silver Lakes	2/25	26	5.5	4.0	6. 3	2
Mesa Lakes	2/28	58	14.9	12.0	13.2	23	Summitville (a)	3/3	70	22.0	8.7	16.	
Trickle Divide(a)	2/24	63	18.9	19.8	22.3	20		·					
	•						CONEJOS RIVER						
UNNISON RIVER							River Springs	2/25	20	4.8	6.1	7.4	1
rested Butte	2/25	25	4.8	10.4	12.6	24	Cumbres Pass(a)	3/3	87	26.1	8.7	16.8	3
ark Cone	2/26	36	7.8	6.8	9.4	23	Platoro (a)	,	NS		8.5	13.0)
lexander Lake(a)	2/24	59	16.9	15.3	17.6	23							
onton Park	2/25	42	11.6	9.2	10.3	22	SANGRE DE CRISTO	RANGE	(COLOF	RADO)			
rickle Divide (a)	2/24	63	18.9	19.8	22.2	20	LaVeta Pass	2/24	32	7.0	6.7	8,4	Į
ark Reservoir(a)	2/24	60	18.1	17.2	20.9	20	Culebra	3/3	42	9.8	4.1	8.	7
orphyry Creek	2/26	53	14.5	12.9	13.5	19		,					
ake City	2/29	30	8. 1	6.3	8.8	11	CHAMA RIVER						
ochetopa Pass*	2/26	28	5.7	5.0	4.2	11	Cumbres Pass (al	3/3	87	26.1	8.7	16.8	}
cClure Pass (a)	2/24		14. 1	16.5	13.4	10	Payrole (a)	3/3	49	14.0	6.0	8.4	
ed Mt. Pass	2/29		27.4	22.3	23, 8	9	Chama Divide	2/26	28	6.1	. 4	4.4	
lue Mesa	2/25	29	5. 5	6.0		1	Chamita	2/26	32	8.5	4.9	8. 7	7
	-,					-	Bateman	2/26	42	11.2	7.5	10.0)
AN JÙAN RIVER								·					
olf Creek Pass*	2/29	91	27.2	15.3	25.4	23	PECOS RIVER						
pper San Juan	2/29	104	30.1	18.1	27.6	22	Panchuela	2/29	24	6.0	2.0	3.3	
olf Creek Summit	2/29	105	33.9	12.3	21.4	9	Big Tesuque	2/25	31	7.0	1.3	4.7	•
hama Divide*	2/26	28	6.1	. 4	4.4	20	Rio En Medio*	2/25	42	11.4	3.6	6.3	
namita*	2/26	32	8.5	4.9	8.7	19							
							RIO GRANDE IN NE	W MEXIC	CO				
NIMAS RIVER							Red River	2/29	24	5.7	3.1	6.9)
lverton Sub. S.	2/29	31	7.4	3.6	5.1	18	Taos Canyon	2/29	23	5.8	4.0	5.5	
onton Park*	2/25		11.6	9.2	10.3	22	Aspen Grove	2/26	30	8.7	2.3	4.1	
ascade	2/29		11.8	7.4	11.3	21	Hematite Park*	2/29	18	4.4	2.1	5.6	
oud Mt.	2/29		21.8	12.5	21.3	9	Tres Ritos	2/25	26	5.9	3.4	5.8	
olas Lake	2/29		10.2	7.0	13.2	9	Payrole (a)	3/3	49	14.0	6.0	8.4	
owardville		NS		7.8	9.5	9	Cordova (a)	3/3	63	14.5	8.0	9.5	
ineral Creek	2/29	56	13.7	11.4	12.5	9	Big Tesuque	2/25	31	7.0	1.3	4.7	
ed Mt. Pass*	2/29	92	27.4	22.3	23.8	9	Elk Cabin				2.0	2.8	
							Rio En Medio	2/25	42	11.4	3.6	6.3	
OLORES RIVER							Quemazon	2/25	46	11.7	7.0	6.6	
ico	2/26	33	7.8	5.6	7.9	20	Fenton Hill	2/29	33	6.3	2.2	4.0	
elluride	2/27	29	5.3	6.0	6.7	21							
izard Head	2/26		12.3	12.1	13.2	18	CANADIAN RIVER						
rout Lake	2/29		13.0	9.5	11.2	11	Hematite Park	2/29	18	4.4	2.1	5.6	
							Tres Ritos	2/25	26	5.9	3.4	5.8	
							Cordova (a)	3/3	63	14.5	8.0	9.5	

^{*} On adjacent drainage

** Courses with less than 15 years record in period 1943-57
have all years prior to 1957 averaged.

NS No Survey
(a) Air Observed



Federal - State - Private COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"